WHAT IS CLAIMED IS:

1. A method for promoting wound healing in a subject in need of such treatment comprising administering to the subject a wound-healing effective amount of a composition containing a wound healing polypeptide comprising the amino acid sequence LKKTET and conservative variants thereof having wound healing activity.

2. The method of claim 1, wherein the wound healing polypeptide is thymosin β4 or an isoform of thymosin β4.

3. The method of claim 2, wherein the composition further contains an agent that stimulates the production of thymosin β4 peptide.

4. The method of claim 3, wherein the agent is transforming growth factor beta (TGF-b).

5. The method of claim 1, wherein the wound healing polypeptide is delivered systemically.

6. The method of claim 1, wherein the wound healing polypeptide is delivered topically.

7. The method of claim 6, wherein the wound healing polypeptide is contained in a topical formulation selected from the group consisting of a gel, cream, paste, lotion, spray, suspension, dispersion, salve, hydrogel and ointment.

8. The method of claim 1, wherein the wound healing polypeptide is recombinant or synthetic.

9. The method of claim 2, wherein the isoform of thymosin β4 is at least 70% homologous to thymosin β4 peptide set forth as SEQ ID NO:1 in Figure 10.

10. The method of claim 9, wherein the isoform of thymosin β4 is selected from the group consisting of: $T\beta4^{ala}$, Tβ9, Tβ10, Tβ11, Tβ12, Tβ13, Tβ14 and Tβ15.

11. The method of claim 1, further comprising contacting the site of the wound with an agent which promotes wound healing.

12. The method of claim 11, wherein the agent is selected from the group consisting of IGF, IGF-1, IGF-2, IL-1, PDGF, FGF, KGF, VEGF, prothymosin α, thymosin α1 or combinations thereof.

13. A method for promoting wound healing in a subject in need of such treatment comprising administering to the subject a wound-healing effective amount of a composition containing thymosin β4 or an isoform of thymosin β4.

14. The method of claim 13, wherein the composition further contains an agent that stimulates the production of thymosin β4 peptide.

15. The method of claim 14, wherein the agent is transforming growth factor beta (TGF-b).

16. The method of claim 13, wherein the thymosin β4 is delivered systemically.

17. The method of claim 13, wherein the thymosin β4 is delivered topically.

18. The method of claim 17, wherein the thymosin β4 is contained in a topical formulation selected from the group consisting of a gel, cream, paste, lotion, spray, suspension, dispersion, salve, hydrogel and ointment.

19. The method of claim 13, wherein the thymosin β4 is recombinant or synthetic.

20. The method of claim 13, wherein the isoform of thymosin β4 is at least 70% homologous to thymosin β4 peptide set forth as SEQ ID NO:1 in Figure 10.

21. The method of claim 13, wherein the isoform of thymosin β4 is selected from the group consisting of: $T\beta4^{ala}$, Tβ9, Tβ10, Tβ11, Tβ12, Tβ13, Tβ14 and Tβ15.

22. The method of claim 13, further comprising contacting the site of the wound with an agent which promotes wound healing.

23. A method for promoting wound healing in a tissue comprising contacting the tissue with a therapeutically effective amount of a composition containing a wound healing polypeptide comprising the amino acid sequence LKKTET and conservative variants thereof having wound healing activity.

24 The method of claim 23, wherein the wound healing polypeptide is thymosin β4 or an isoform of thymosin β4.

25. The method of claim 23, wherein the contacting is *in vivo* in a subject.

26. The method of claim 23, wherein the contacting is *ex vivo*.

27. The method of claim 23, wherein the subject is a mammal.

28. The method of claim 27, wherein the mammal is human.

29. The method of claim 24, wherein the composition further contains an agent that stimulates the production of thymosin β4 peptide.

30. The method of claim 29, wherein the agent is transforming growth factor beta (TGF-b).

31. The method of claim 29, wherein the agent is a mineral.

32. The method of claim 29, wherein the mineral is zinc.

33. The method of claim 23, wherein the wound healing polypeptide is delivered topically.

34. The method of claim 23, wherein the wound healing polypeptide is contained in a topical formulation selected from the group consisting of a gel, cream, paste, lotion, spray, suspension, dispersion, salve, hydrogel and ointment.

35. The method of claim 23, wherein the wound healing polypeptide is delivered systemically.

36. The method of claim 23, further comprising contacting the site of the tissue with an agent which promotes wound healing.

37. The method of claim 36, wherein the agent is selected from the group consisting of IGF, IGF-1, IGF-2, PDGF, FGF, KGF, VEGF, prothymosin α, thymosin α1 or combinations thereof.

38. The method of claim 23, wherein the tissue is selected from the group consisting of epidermal, eye, uro-genital, gastro-intestinal, cardiovascular, muscle, connective, and neural.

39. The method of claim 23, wherein the tissue is skin tissue.

40. The method of claim 23, wherein the tissue is eye tissue.

41. A method of inhibiting wound healing in a subject, comprising administering to the subject a composition containing an agent which regulates thymosin β4 activity.

42. The method of claim 41, wherein the agent is an antibody.

43. The method of claim 42, wherein the antibody is polyclonal.

44. The method of claim 42, wherein the antibody is monoclonal.

45. A method of diagnosing a pathological state in a subject suspected of having pathology characterized by a wound healing disorder associated with thymosin β4, comprising:

obtaining a sample suspected of containing thymosin β4 from the subject;

detecting a level of thymosin β4 in the sample; and

comparing the level of thymosin β4 in the sample to the level of thymosin β4 in a normal standard sample.

46. The method of claim 45, wherein the pathology is selected from the group consisting of fibrotic disease, ischemia, atherosclerosis and cell proliferative disorders.

47. A method for ameliorating a wound healing disorder associated with thymosin β4, comprising treating a subject having the disorder, at the site of the disorder, with an agent which regulates thymosin β4 or the activity of a thymosin β4 isoform.

48 The method of claim 47, wherein the thymosin β4 regulating agent is an antagonist of thymosin β4 peptide.

49. The method of claim 48, wherein the antagonist is an antibody which specifically binds to thymosin β4 peptide.

50. A method for identifying a compound which modulates wound healing, angiogenesis or cell migration activity, comprising contacting thymosin β4 or an isoform of thymosin β4 with a compound suspected of having thymosin β4 modulating activity and detecting an effect on thymosin β4 or thymosin β4 isoform activity.

51 The method of claim 50, wherein the compound is an agonist of thymosin β4 activity.

52. The method of claim 50, wherein the compound is an antagonist of thymosin β4 activity.

53 A method of promoting epithelial cell migration, comprising contacting an epithelial cell with a composition comprising thymosin β4 or an isoform of thymosin β4.

54. The method of claim 53, wherein the epithelial cell is a skin cell.

55. The method of claim 54, wherein the skin cell is a keratinocyte.

56. The method of claim 53, wherein the epithelial cell is a corneal epithelial cell.

57. The method of claim 53, wherein the contacting is *in vivo*.

58. The method of claim 57, wherein the contacting is topical.

59. The method of claim 57, wherein the contacting is systemic.

60. The method of claim 53, wherein the contacting is *in vitro* or ex vivo.

61. The method of claim 53, wherein the composition is selected from the group consisting of a gel, cream, paste, lotion, spray, suspension, dispersion, salve, hydrogel, ointment, and a biocompatible matrix.

62. A pharmaceutical composition comprising wound healing polypeptide comprising the amino acid sequence LKKTET and conservative variants thereof having wound healing activity, and a pharmaceutically acceptable carrier.

63 The pharmaceutical composition of claim 62, wherein the wound healing polypeptide is thymosin β4 or an isoform of thymosin β4.

64. The pharmaceutical composition of claim 62 in a controlled release formulation.

65. The pharmaceutical composition of claim 62 in a liposomal form.

66. The pharmaceutical composition of claim 62 in a lyophilized form.

67. The pharmaceutical composition of claim 62 in a unit dosage form.

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